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## A New Gamasid Mite Associated with the Okinawan Long-armed Scarabaeid Beetle, *Cheirotonus jambar*

By

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(Communicated by Yoshihiko KUROSAWA)

**Abstract** A new mite of the genus *Hypoaspis* belonging to the gamasid family Laelapidae is described under the name of *H. jambar*. It is associated with the Okinawan long-armed scarabaeid beetle, and is closer to African species of the genus than to Japanese ones.

Many species of gamasid mites associated with insects have been described from Japan by ISHIKAWA (1968, 1977) and others. Two of them are known to occur on scarabaeid beetles, *Hypoaspis allomyrinatus* ISHIKAWA ex *Allomyrina dichotomus* (LINNÉ) and *Hypoaspis (Coleolaelaps) longisetatus* ISHIKAWA ex *Polyphylla laticollis* LEWIS.

Recently, the author received from Dr. Kazuyoshi KUROSA a series of specimens of a gamasid mite associated with the Okinawan long-armed scarabaeid beetle, *Cheirotonus jambar* Y. KUROSAWA. They were found on the holotype of the beetle, which was still kept alive at the National Science Museum, Tokyo, when Dr. KUROSA's examination was made. After a careful examination, it has become evident that the gamasid is a new species of the genus *Hypoaspis*. It will be described in the present paper under the name of *H. jambar*.

The type series used for this study is deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo. Some duplicate specimens are retained in the collection of the Biological Laboratory, Matsuyama Shinonome Junior College, Matsuyama.

Before going further, the author wishes to express his hearty thanks to Dr. Yoshihiko KUROSAWA and Mr. Hikaru KAN for their permission to examine the living material of the host beetle, and to Dr. Kazuyoshi KUROSA for submitting valuable specimens for the author's study. Deep gratitude is also due to Professor Kuniyasu MORIKAWA and Dr. Shun-Ichi UÉNO for offering useful criticism and suggestion.

***Hypoaspis (Hypoaspis) jambar* sp. nov.**

[Japanese name: Yambaru-hosotogedani]

(Figs. 1–2)

**Type series.** Holotype ♀ (NSMT-Ac 9708) and allotype ♂ (NSMT-Ac 9709):

ex *Cheirotonus jambar* Y. KUROSAWA (Coleoptera, Scarabaeidae), found in a hole on a living oak (*Cyclobalanopsis miyagii* KUDO et MASAMUNE), Ié Forestry Road, Kuni-gami, Okinawa Island, Ryukyus, 9-II-1984, T. MIZUNUMA leg. (the mites were detached by K. KUROSA on 30-VII-1984). Paratypes: 16 ♀♀ (NSMT-Ac 9710), same data as the holotype; 10 ♀♀, 3 ♂♂, 4 deutonymphs, ex a larva of the same collecting data as the holotype (detached by K. ISHIKAWA on 6-XI-1984).

*Female.* Length of idiosoma av. 735  $\mu\text{m}$ ; length of dorsal shield with a range of 670–798  $\mu\text{m}$ , av. 712  $\mu\text{m}$ ; width of dorsal shield at the level of coxae IV with a range of 376–465  $\mu\text{m}$ , av. 447  $\mu\text{m}$ .

*Dorsum.* Dorsal shield entire, weakly reticulated, provided with thirty-seven pair of simple setae, of which the setae on marginal portion especially setae Z4 are long, and twenty pair of pores. Setae Z4 about four times as long as setae J4, dorsal setae j1 and integumental setae R7 approximately equal in length. Length of setae (holotype): verticals 85  $\mu\text{m}$ , j2 105  $\mu\text{m}$ , j3 127.5  $\mu\text{m}$ , j4 82  $\mu\text{m}$ , j5 70  $\mu\text{m}$ , z1 37.5  $\mu\text{m}$ , s1 80  $\mu\text{m}$ , s3 130  $\mu\text{m}$ , s5 112.5  $\mu\text{m}$ , r2 92.5  $\mu\text{m}$ , J1 35  $\mu\text{m}$ , J4 43  $\mu\text{m}$ , J5 32.5  $\mu\text{m}$  and Z4 170  $\mu\text{m}$ . The distribution and relative length of the setae and pores are as shown in Fig. 1.

*Venter.* Tritosternum well developed, a pair of pilose laciniae more than twice

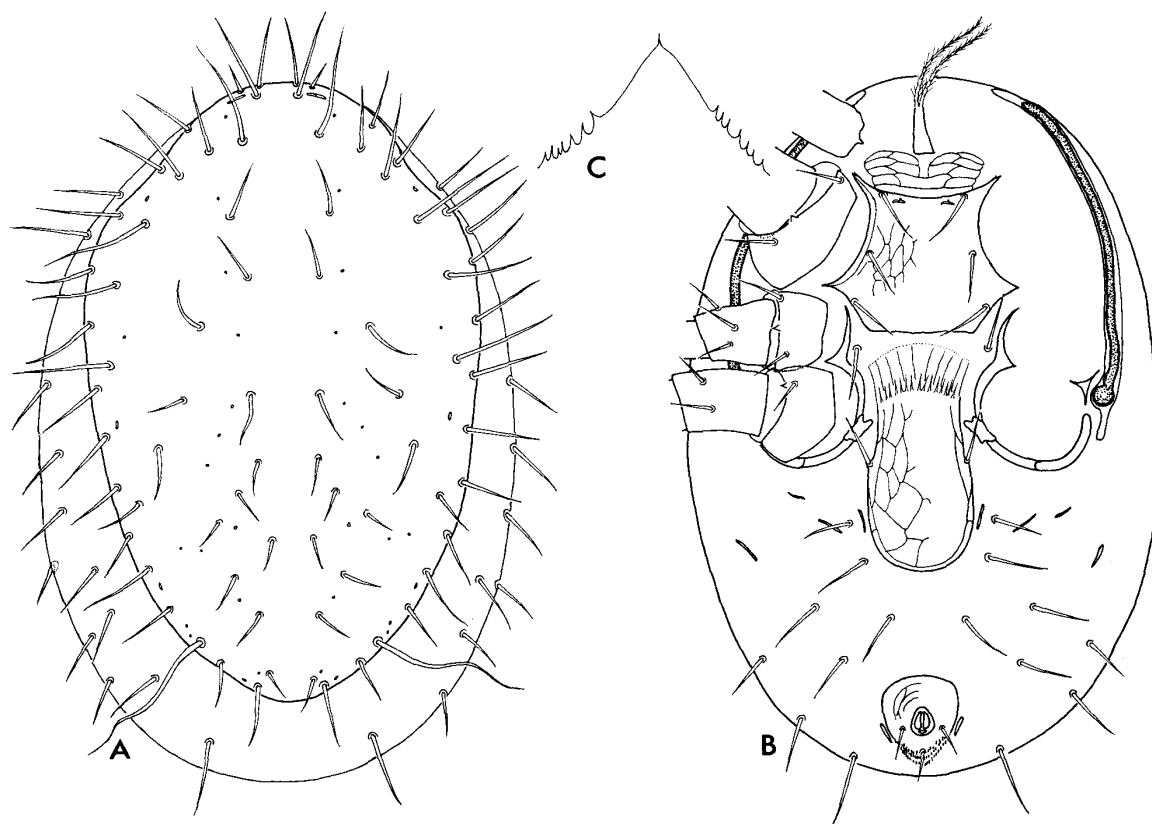


Fig. 1. *Hypoaspis (H.) jambar* sp. nov. female. — A, Dorsum; B, venter; C, epistome.

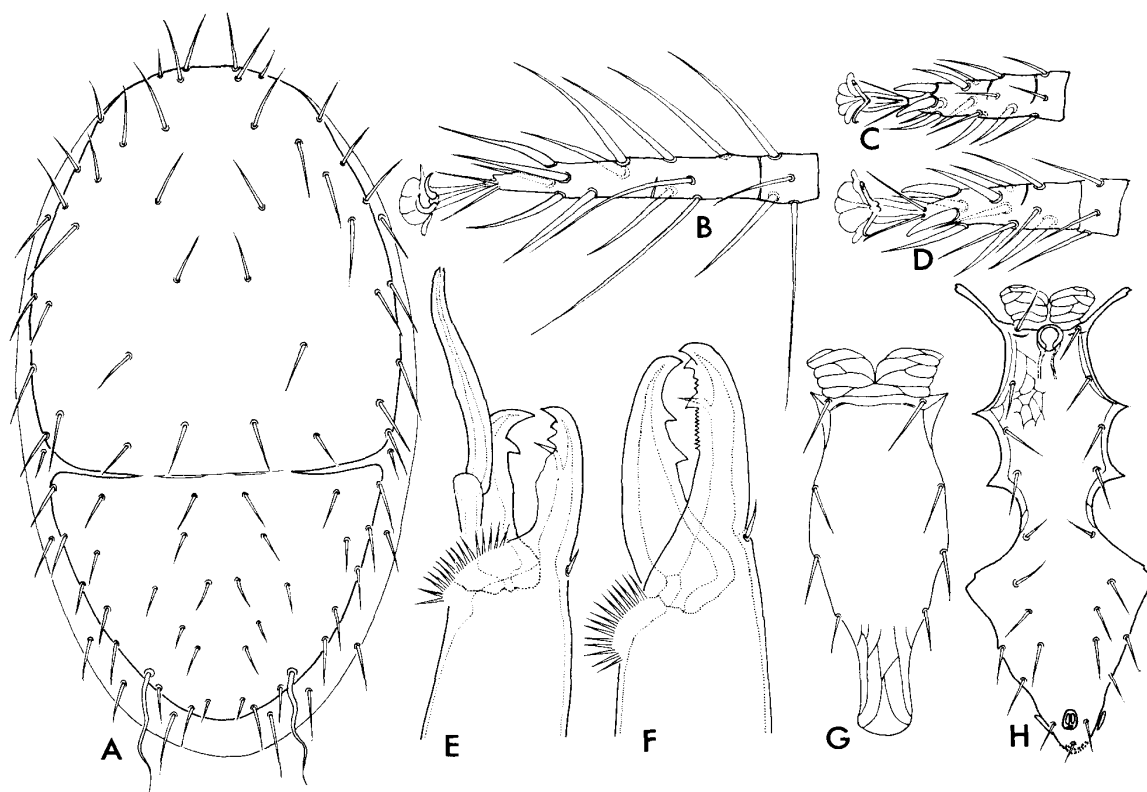


Fig. 2. *Hypoaspis (H.) jambar* sp. nov., (A, G. deutonymph: B, D, F, female: C, E, H, male).  
— A, Dorsum; B, tarsus IV; C–D, tarsus II; E–F, chelicera; G. sterno-metasterno-genital shield; H, holoventral shield.

longer than tritosternal base. Presternal shields weakly sclerotized, granular and reticulated. Sternal shield reticulated, bearing three pair of simple setae. Sternal setae IV lying on interscutal membrane. Epigynial shield tongue-shaped, reticulated, and provided with a pair of simple setae. Anal shield ovoid, bearing three perianal setae. Metapodal shields elongate, situated as illustrated. Interscutal membrane between dorsal and ventral shields provided with twenty-one pair of setae, of which five pairs are feebly pilose and the remainings simple. Stigmata situated at a position anterolateral to coxae IV. Peritremes extending anteriorly beyond coxae I, peritrematal shield in the form of slender process behind the stigma.

**Gnathosoma.** Epistome triangular, with a distally pointed smooth median projection and several short spines on either side. Palpal apotele with two tines. Fixed digit of chelicera provided with two large teeth, in addition to about thirteen small teeth and a pilus dentilis, while movable digit ( $115\ \mu\text{m}$ ) is bidentate and longer than corniculus ( $77\ \mu\text{m}$ ). Length of rostral setae  $63\ \mu\text{m}$ , internal posterior rostrals  $95\ \mu\text{m}$ , external posterior rostrals  $41\ \mu\text{m}$  and deutosternals  $46\ \mu\text{m}$ .

**Legs.** Tarsus I with small claws and pulvilli, tarsi II to IV each with well developed claws and pulvilli. Tarsus II bearing a pair of stout spurs and six blunt spines;

tarsus IV with two, femur IV with one long macroseta. Lengths of legs (holotype, excluding pretarsus) I 750  $\mu\text{m}$ , II 604  $\mu\text{m}$ , III 581  $\mu\text{m}$  and IV 837  $\mu\text{m}$ .

*Male.* Length of dorsal shield 558  $\mu\text{m}$ , 576  $\mu\text{m}$ , 580  $\mu\text{m}$  and 595  $\mu\text{m}$ , av. 584.8  $\mu\text{m}$ ; width of dorsal shield at the level of humeral setae av. 361.6  $\mu\text{m}$ . Dorsal chaetotaxy and ornamentation similar to those of female. Holoventral shield reticulated, bearing ten pair of simple setae in addition to para-anal and post-anal setae. Genital orifice situated on the anterior margin of sternal portion. Fixed digit of chelicera provided with two teeth and a pilus dentilis; movable digit (67.5  $\mu\text{m}$ ) unidentate, sperm transfer organ about twice the length of movable digit. Tarsus II provided with a pair of stout spurs and six blunt spines; tibia II with a pair of blunt spines centrally; genu with one blunt spine; femur II with broad and slender spines and a long macroseta. Lengths of legs (allotype, excluding pretarsus) I 612  $\mu\text{m}$ , II 520  $\mu\text{m}$ , III 507  $\mu\text{m}$  and IV 702  $\mu\text{m}$ .

*Deutonymph.* Length of idiosoma av. 565  $\mu\text{m}$ ; dorsal shield 527  $\mu\text{m}$ , 564  $\mu\text{m}$ , 568  $\mu\text{m}$  and 570  $\mu\text{m}$ , av. 557.3  $\mu\text{m}$ ; width of dorsal shield at the level of humeral setae av. 28.7  $\mu\text{m}$ . Dorsal scuta medially joining, with a deep incision on each side between the two shields. Propodosomal shield (av. 333.0  $\mu\text{m}$  in length) longer than hysterosomal shield (av. 224.3  $\mu\text{m}$  in length); the former provided with twenty pair of simple setae and the latter with sixteen pair of similar ones. Sterno-metasterno-genital shield bearing four pair of simple setae; posterior portion faintly reticulated. Gnathosoma and legs similar to those of the female.

*Notes.* The present species can be readily distinguished from *Coleolaelaps boas* RYKE et MEYER, 1958, from Potchefstroom in South Africa (ex *Oryctes boas* and *Copris elphanor*), by the following characteristics: dorsal shield provided with thirty-seven pair of simple setae instead of thirty-six; integumental setae shorter than in the latter; epistome with a distally pointed smooth projection at the middle and several short spines on either side, whereas the spines extend over the entire length of the epistome in the latter. Further, the present species differs from *Hypoaspis (H.) krameri* CANESTRINI, 1881 (EVANS & TILL, 1966, p. 163; HIRSCHMANN, 1969, p. 140; KARG, 1971, p. 70) from Europe (ex *Lucanus* spp. and *Oryctes* spp.) in the following characteristics: the dorsal setae s3, s4, s5, Z4, Z5 and the integumental setae are shorter.

The specific name of the present species is derived from that of the host beetle, which is the Latinized spelling of the Okinawan dialect, Yambaru.

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